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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/925,884	08/06/2001	Michael Kenny	54008.8100.US00 P01-0015	7035
45540 7590 11/06/2008 PERKINS COIE LLP/SEMITOOL PO BOX 1208 SEATTLE, WA 98111-1208			EXAMINER MARKOFF, ALEXANDER	
			ART UNIT 1792	PAPER NUMBER
			MAIL DATE 11/06/2008	DELIVERY MODE PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 09/925,884	Applicant(s) KENNY ET AL.	
	Examiner Alexander Markoff	Art Unit 1792	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 27 August 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-10, 12-14, 17, 20, 22, 24-29, 39, 41-45 and 50-52 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-10, 12-14, 17, 20, 22, 24-29, 39, 41-45 and 50-52 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

4. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

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5. Claims 1-10, 12-14, 17, 20, 22, 24-29, 39, 41-45 and 50-52 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yoshitani et al (US Patent NO 5,975,098) in view of Lampert et al (US Patent NO 5,181,985).

Yoshitani et al teach a method as claimed except for the use of ozone and other gasses and the use of heated liquids. See entire document, especially Figures 1, 3, 10, 11, 12, 14, 18 and 22 and the related description.

Lampert et al teach that introduction of ozone and the other claimed chemicals into liquid sprays and the use of the heated liquids was known to improve cleaning. See entire document, especially Summary of the Invention.

It would have been obvious to an ordinary artisan at the time the invention was made to incorporate the use of ozone and other chemicals disclosed by Lampert et al and to use heated liquids in the method of Yoshitani et al with reasonable expectation of success in order to enhance cleaning because Lampert et al teach that such improves cleaning results.

As to claim 12, which requires irradiating the work piece with UV, infrared, microwave, gamma or x-ray radiation:

It is noted that the claim does not require irradiation during application of the liquids. The examiner's position is that the claimed radiations are conventionally used in the semiconductor industry for variety of applications such as cleaning, etching, coating, lithography, etc. It would have been obvious to an ordinary skill in the art that the semiconductor substrate would be subjected to the recited radiations at least at some point of the manufacturing process.

Response to Arguments

6. Applicant's arguments filed 8/27/08 have been fully considered but they are not persuasive.

The applicants allege that nothing in Yoshitani suggests that a chemical cleaning process could be implemented or would be desirable.

This is not persuasive because Yoshitani in contrast to the applicants' statement teaches that it was known to combine chemical and physical cleaning to remove different types of contamination. Yoshitani also teaches that the use of ozonated water obtained by dissolving ozone in water was known for the referenced chemical cleaning. See at least column 1, lines 23-31.

The applicants further argue that Lampert does not disclose a liquid layer. The applicants allege that having liquid layer on the surface would preclude the interaction disclosed by Lampert.

This is not persuasive.

Lampert teaches supplying gaseous chemicals to interact with finely divided water to produce phases acting on the surface.

Lampert teaches that conventional nozzle systems and conventional spray cleaning processes are suitable for applying agents to the wafers. See at least column 2, lines 40-45.

The examiner disagrees with the applicants in the interpretation of the teaching of the Lampert.

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Lampert teaches action of the liquid produced by interaction of the water mist and the gas with the wafer surface. Since the entire wafer is treated/cleaned it is inherent that the entire surface is interacted with the liquid. Moreover, Lampert clearly teaches removal of the liquid after it acted on the surface and drying the wafers after the treatment.

The fact that the water sprayed from the nozzle interacts with the gas in the chamber does not change the fact that the spray of the liquid is delivered to the surface of the wafer to treat the surface and that the gas is present in the chamber during the referenced treatment and that the liquid is present on the surface and is removed after the treatment.

The examiner disagrees with the applicants allegation that Lampert teaches away from forming a liquid layer on the surface and with the applicants' conclusion that gas interact with water directly on the wafer surface.

Lampert creates a water mist in the chamber and supplies gas into the chamber. It is inherent that the gas and the mist interact in the chamber. Since the gas is present in the chamber during the treatment it is also interacts and dissolves in the liquid presented on the surface of the wafer.

The water sprayed on the surface would be presented on the surface and would form a liquid which will treat the surface.

The applicants further argue that none of the applied documents mention how a gas can get to the surface when a liquid layer is present on the surface.

This is not persuasive because dissolution of the soluble gases is an inherent property as well as diffusing the gas. The gasses presented in Lampert and in the modified method of Yoshitani would diffuse and dissolve into the liquid present on the surface.

The applicants further argue that the cited references do not disclose entraining gas into a column of the heated liquid.

The applicants argue that in Lampert the mist and the gas are delivered separately in the chamber.

This is not persuasive.

First, the claims do not exclude entraining in the chamber. In the modified method of Yoshitani the gas delivered into the apparatus would inherently entrained into all liquid presented in the apparatus, which the gas would contact. Second, in contrast to the applicants' allegation, Lampert also teaches introduction of solutions and mixed system using solutions and gasses. See at least column 3, line 59 - column 4, line 17.

Conclusion

7. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not

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mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Alexander Markoff whose telephone number is 571-272-1304. The examiner can normally be reached on Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Barr can be reached on 571-272-1414. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Alexander Markoff
Primary Examiner
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Primary Examiner, Art Unit 1792